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FOOD ENGINEERING

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FUTURE FOODS

FOOD LABS '92 CONFERENCE SEE P.16

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FOOD ENGINEERING

ABOUT THE COVER

Future foods, while retaining the appearance of traditional foods, will be composed of increasingly diverse ingredients. Even now, engineers are able to transform exotic fish protein into the traditional hot dog.

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SPECIAL EMPHASIS

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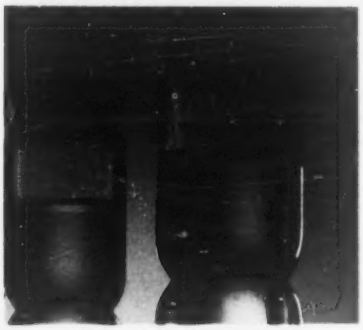

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JESSE H. NEAL AWARD-WINNING EDITORS

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... and lowering the sodium content

Also discussed at the FDLI's annual conference (see page 11) was the frustration food marketers experience attempting to advertise reduced sodium foods under the FDA's proposed guidelines. To be able to use the term "reduced sodium" the sodium content must be cut by more than half, under proposals of the NLEA.

Consumers Describe How They Use Food Labels

92% read expiration label.

84% read ingredient information.

81% read nutritional information.

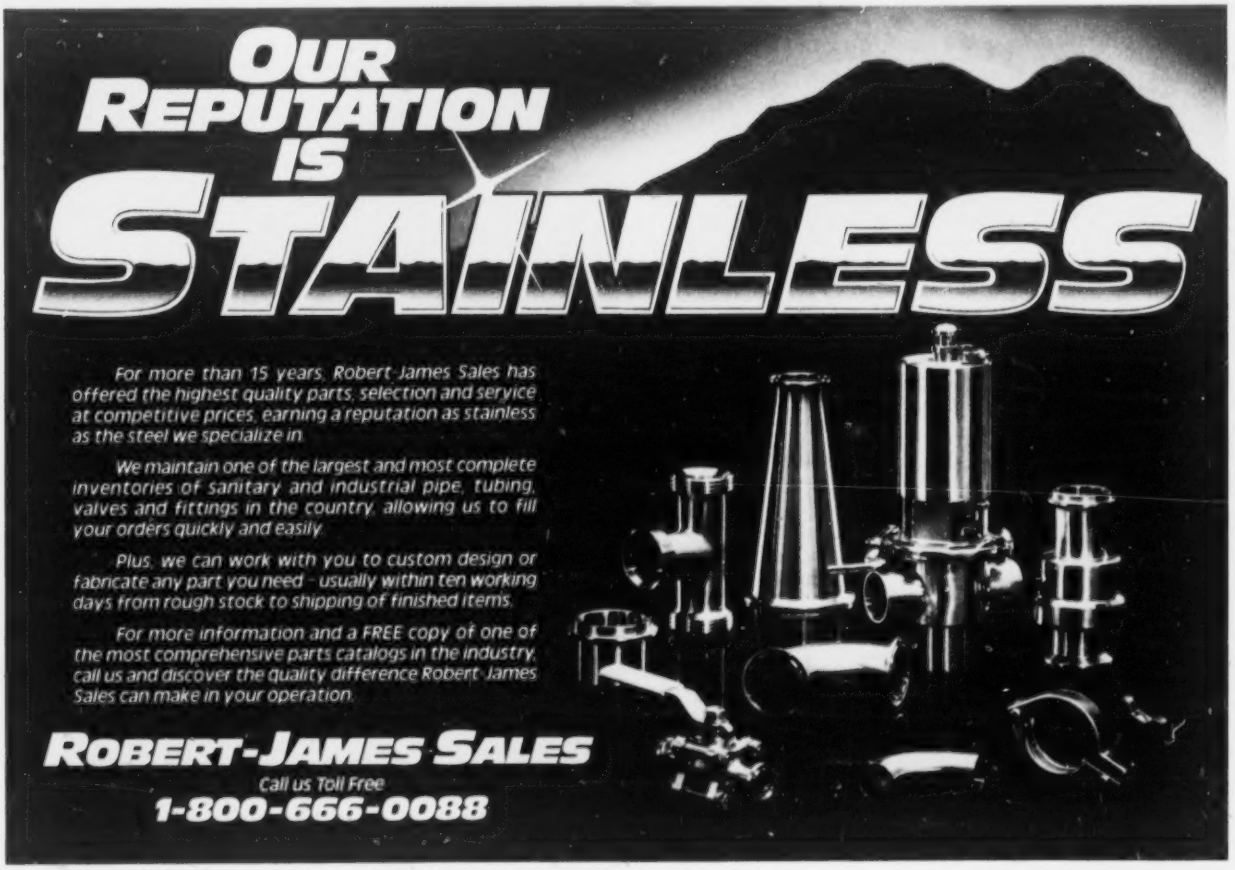
50% say present format is inadequate.

8% say manufacturers' statements are believable.

52% say manufacturers' statements are somewhat believable.

Source: Food Marketing Institute. Total exceeds 100% due to multiple answers.

However, Gayle Crose of General Mills said manufacturers traditionally reduced sodium in small increments to maintain consumer acceptance, and the ruling prevents use of the coveted "reduced sodium" descriptor for incremental reductions. Phil Lempert, president of Consumer Insight, Inc., questioned the necessity of using health claims on all products. Meanwhile, Kellogg's Marilyn Schramm, citing a recent Texas state attorney general's action against cereal makers, said that state attorney generals are no longer motivated by local concerns but are making ***forays into the jurisdiction of the federal government.*** *(Ed. note: as of FE presstime, it was learned that Texas assistant attorney general Stephen Gardner, an outspoken critic of food manufacturers' health claims, had been asked to resign by state attorney general Dan Morales [who replaced Jim Mattox in January 1991]. The Morales administration is expected to back off from the aggressive advertising regulation spearheaded by Gardner.)*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FUTURE FOODS

FOOD TECHNOLOGY'S EXCELLENT ADVENTURE

Engineering and R&D put a twist on 'everything old is new again.'

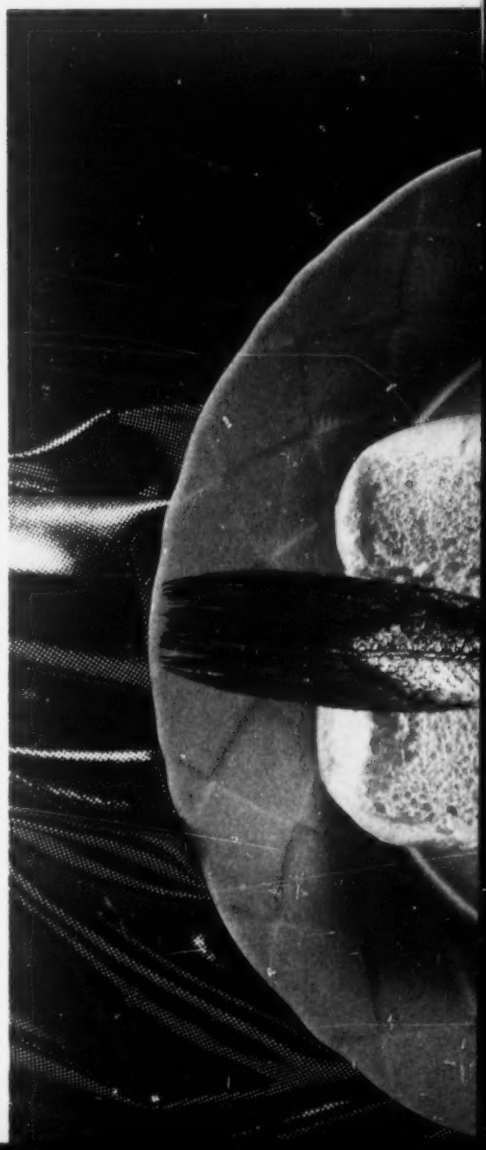
LETICIA MANCINI
TECHNICAL EDITOR

In preparation for this article, *Food Engineering* asked food industry executives what foods were in store for future eaters. One particularly thoughtful exec proclaimed, "Future foods are sometimes past foods in another form."

This is especially true in the case of restructured meats. According to Norwalk, CT-based Business Communications Company's report titled, appropriately enough, *Engineered Foods*, estimates of various types of these foods encompass a $6.5 billion market. This particular report discusses the market for engineered/restructured/substitute products which are primarily ingredients used in processed foods as well as various food products sold in the retail market. The report concludes that marketers will continue to cater to niches in the future, which should come as no surprise. What's new, however, are the hows and whys.

Many describe restructured technology as mature, but perhaps "evergreen" is a better word, referring to the wealth of new and improved applications. For example, a team from ABC Research in Gainesville, FL has recently discovered how to defat beef during the separation process, so that the restructured beef will actually have a fat content approaching that of turkey.

And turkey is one meat that is showing up a lot more than at holiday



dinners. Witness the success of Louis Rich *Turkey Bacon*. Made from chopped and formed turkey meat—where the white breast meat is the "fat" and cured thigh meat lends the familiar red color—a cooked slice has only 30 calories, but weighs 50 percent more than a slice of regular bacon because it doesn't shrink. Consumer acceptance has been high enough that other companies have introduced their versions of turkey bacon.

Looking a little farther into the future, consumers may come back to beef because of a new vaccine that makes it naturally lean. The technology has been developed, says Dr. Richard Gill of the British Technology Group USA, who is handling the licensing, "but people will need to overcome their wariness about science before we see it on the market." And yes, it works on humans, too.

But meanwhile: "We're still getting too much fat from meat and poultry," commented Dr. Paul LaChance, professor of food science at Rutgers University in New Brunswick, NJ. "The American diet needs more Omega-3 fatty acids from fish." However, he noted that fish is too expensive to be a significant part of the average consumer's diet. "Fish needs to be farmed rather than hunted," he said.

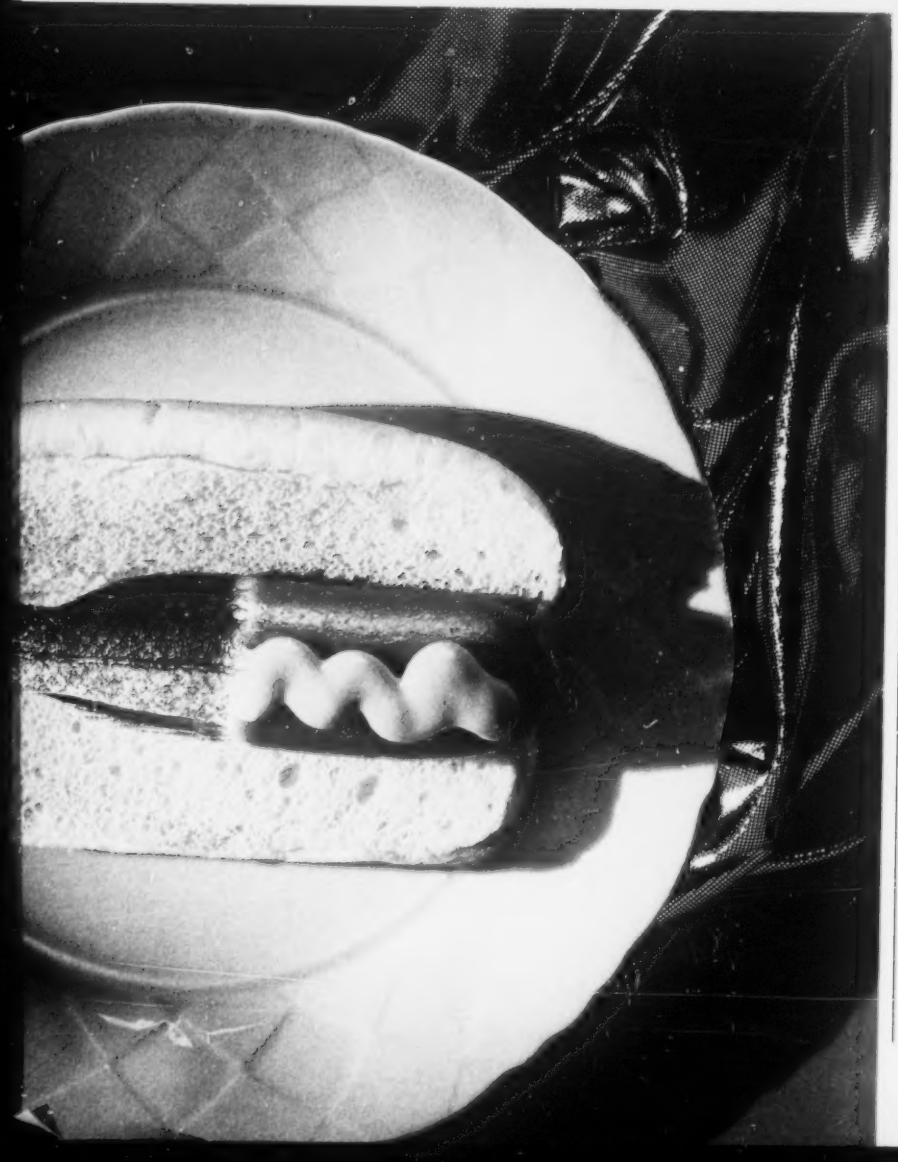
Aquaculture is one way to bring down the cost of fish nutrients. Surimi is another. But will surimi really graduate beyind its narrow seafood salad niche? Unisea Foods of Redmond, WA is banking on it. The company has developed a finely textured surimi that can be baked and deep-fat fried without coming apart.

Bob Leavengood, vice-president of Unisea, attributes the enhanced functionality to the way the surimi shreds are processed. The shreds are extruded, then treated with an acid-setting solution that denatures the protein and helps the surimi to retain its shape. The product is then cooked, neutralized and shaped into nuggets. Breaded nuggets are sold to foodservice operations for frying. In fact, the nuggets are already featured in captain's platters in Northwestern seafood restaurants and in the fish and chips served to Seattle Seahawks fans in the Kingdome.

Don't have a cow

"There will always be some people who want an old-fashioned steak," said Rutger's LaChance, "but more and more people are exploring protein alternatives." Some upstart companies even go so far as to say, "Don't have a cow." That's the advertising theme for new rice and bean *Meals in a Cup* from Fantastic Foods in Petaluma, CA. Targeted to those who eschew meat (at least on a part-time basis), this product is rich in beta-glucan fiber which is believed to reduce cholesterol and the risk of heart disease. Similar products are targeted to the health-conscious who eat less saturated fat from red meat.

But even companies whose names



Foods of the future will look familiar enough, but will often be made with some novel or unexpected ingredients.

Developing foods for fun and profit

One common denominator of future foods is the targeting of specialized segments. One interesting example of this principle is *OHIO PASTA*, a new "maparoni" made in the shape of Ohio and distributed by LAD Products of Columbus, OH.

The brainchild of Ohio State graduates Lisa Waite and Daniel Crowe, OHIO PASTA is shaped in the outline of Ohio with a small circle in the center denoting capital city Columbus, and spokes representing the state's major interstates. According to company legend, Waite and Crowe got the idea for the product while eating pasta salad at a Buckeye picnic. "Wouldn't it be great if we made a macaroni in the shape of Ohio," they said. Then they did it.

Despite its serendipitous beginnings, product development was a little more complicated. Waite and Crowe relied heavily on their backgrounds in computer aided design: Crowe designed the pasta shape on a MacIntosh computer and coordinated the casting of the die with a company in Brooklyn, NY. After three months of sending samples back and forth, they got the pasta's unique shape just right. Meanwhile, Waite was busy designing the attractive 6-color logo on *her* Mac. But they still needed to subcontract the manufacture.

Eighteen months after the picnic, OHIO PASTA debuted at the Ohio State Fair. The local press was intrigued with the idea, naming it "hottest new product"—not bad for a first effort. Sales have been brisk in and around Columbus' specialty food stores. And what's on tap from the makers of the first computer-designed macaroni? More Ohio products, of course.

are synonomous with meat are exploring the meatless movement. Burger King is now testing a prototype veggie burger in focus groups. The soy-based burger, which is already available overseas, accounts for 6 percent of total sales in Burger King's British outlets.

Soy ingredients are used so often because of their versatility. For instance, tofu usage is growing because it can replace meat in casseroles, quiches and other processed products. Midland Harvest uses it in its *Italian Style Sausage*; it is also the main ingredient in *Great Balls of Tofu* no-meat meatballs.

New soy products developed and used first in Japan eventually find their way into the States. Attendees of the first Taste of Japan Trade show in Long Beach, CA got their first taste of *Kibi Yuba*, a new ingredient derived from boiled soy milk. This product lends itself to a myriad of recipes and surpasses even the protein content of tofu.

But the key to everyday use of these new ingredients is to develop products that the consumer is used to, much the same way that *Tofutti* gave many their first exposure to tofu. For instance, miso (another Japanese food made from soybeans) could be used as an ingredient in condiments, cheeses, salad dressings and spaghetti sauces, where it adds body, richness and flavor. "It minimizes risk," says Dr. Bruce Stillings of Durkee-French Foods, referring to the use of unusual ingredients in everyday products. "Companies today can't afford too many product failures, whether they're selling to a niche or a larger segment." Economics has never been more important.

Will a fat vaccine for cattle return consumers to red meat?

Engineered Foods Market Forecast (in billions of dollars)

	1988	1993
Surimi-based seafood	$.13	$.20
Soy protein ingredients	.50	.55
Dairy substitutes	1.50	2.06
Engineered fats/fat replacers	.45	1.60
High intensity sweeteners	.80	.88
Restructured meats, poultry	1.00	2.00

Source: Business Communications Co.

'What if' foods

Having already identified their target niches—whether it's vegetarians, the calorie-conscious or children—through consumer research, food companies are faced with developing successful new products on a tight budget.

"The first thing we do in a brainstorming session is ask the question 'what if', as in 'what if we played around with the machinery?'" said Barry Wegener of Betty Crocker in Minneapolis. Wegener explained that several new fruit snack products were developed that way. For instance, *Crazy Colors* were born when one engineer decided to take the company's *Garfield* fruit bits and run them through a flat press.

"Basically what we do," said Wegener, "is look at the research, look at what appeals to our market—kids—and look at the capabilities of our machines." Past favorites like the race car and teddy bear fruit snacks may have become this year's *Sodalicious* (tiny bottle-shaped fruit snacks that taste like soda), with minor modifications to the machinery and flavor formulation.

Economic forecasts indicate that modifications and line extensions will be the way many new products are introduced for the next five to ten years—and companies that develop a family of successful products can expect them to be knocked off by competitors.

Bruce Stillings distills it even further: food companies will be classified as innovators or copycats in terms of new product development. "Companies that can afford to spend money on R&D, like General Foods, become the innovators, while smaller companies will succeed by finding niches."

A perfect example is Ralston-Purina. While it is a strong company in its own right, it is overshadowed by the cereal giants, General Mills and Kellogg's. Ralston has gained industry attention by unabashedly pursuing short-term profit with its line of ready-to-eat licensed character cereals. Cereals like *Bill & Ted's Excellent Cereal*, *Prince of Thieves* and *The Addams Family* can make money for the company without a significant investment in R&D.

Mood foods

Stillings sees "low technology" being more of a force in the future because of regulatory obstacles, such as those faced by healthy foods formulators (see Nov. '91 *FE*).

Rather than go the costly and time-consuming nutraceutical route, some companies are finding success through promotion of ingredients, rather than claims. By selling to an informed consumer base who knows that ginger relieves stomach upset, and ginseng is a pick-me-up, traditional medicinals are becoming big business.

Already, several products are beginning to venture out of the health food stores. One product that distributors are finding hard to keep on the shelves is Fischer Brewery's *Beer of Love*. Made in France (where else?), the product is described as "the beer for intimate occasions" because it contains several herbs known for their—shall we say—*stimulating* effects.

Don't laugh, says Linda Gilbert, president of HealthFocus in Emmaus, PA. "These kinds of 'mood foods' are based on East Indian phytotherapy, used for thousands of years. In fact, many of today's phar-

Here's to your health: engineered chocolate

There are those who think of chocolate as a basic food group and those who avoid it because of health problems like allergies. Now the latter group can be chocolate lovers too, with a new process currently available for license from British Technology Group USA in Gulph Mills, PA.

Dr. Leonard Girsh, a Philadelphia immunologist in partnership with BTG USA, has developed a process for removing the protein allergens in cocoa powder that can cause reactions like rashes, eczema, migraines or even death in both children and adults.

Under high temperature, high pressure conditions, the proteins in the cocoa powder are denatured rather than extracted so that the finished chocolate product will taste the same as ordinary chocolate.

Don't be surprised if chocolate is used someday to prevent disease.

So far hypoallergenic chocolate is available only as the dark, bitter type (since the milk in milk chocolate is also a potent allergen), but can be sold as a bar or as an ingredient for other foods.

And for those concerned about calories and dental hygiene, a lot of other scientists are at work developing "good-for-you" chocolate:

- Introducing *Chofu*—the tofu candy bar. These bars have less fat and sodium than regular milk chocolate, but offer high protein content because the milk solids have been replaced with tofu.
- Scientists down under at the University of Melbourne have discovered a tooth decay-fighting protein that can be used in chocolate and other high-sugar foods. The protein is already patented in the U.S. and is expected to become commercially available within three years.
- And finally, the Canadian Department of Defense has funded research to develop the *Canadian Cold Buster*, an all-natural chocolate bar that prevents hypothermia (low body temperature).

maceuticals came from plants. Valium comes from valerian which was often used in ancient cultures to induce sleep."

Another category of foods rooted in Eastern cultures is functional foods, which were first developed in Japan. To be called a functional food, a product must contain one of the 14 recognized physiologically functional ingredients, such as oligosaccharides, sugar alcohols or lactobacilli, in active form and at a dose-effective concentration.

"This concept is of particular interest to the dairy industry," commented Kurt Frey, manager of nutritional ingredient marketing at New Zealand Milk Products and its OPSON nutritional development arm in Santa Rosa, CA. "Milk is often cited as a good potential source of physiologically functional ingredients." Frey noted that research into milk-derived bioactive peptides indicates that they aid digestion, pain relief and mineral absorption.

This new information prompted the Japanese Ministry of Health and Welfare to create a new class of foods known as Specific Health Care Foods. They will be administered by the Environmental Health Bureau of Ministry of Health & Welfare, under the umbrella of the Nutrition Improvement Law. Frey explained that the latter law has existed for some years and was recently amended to incorporate regulation of this new class of foods.

Japan has addressed its increasing aging population and rising health care costs with this law. America is faced with a similar situation. Food science has developed a host of functional and high-performance, healthy fabricated foods in response. The question is, what role will our government play in the marketing of these foods to tomorrow's consumer? ▲

PACKAGING BUYERS SURVEY

CONTINUING IMPROVEMENT

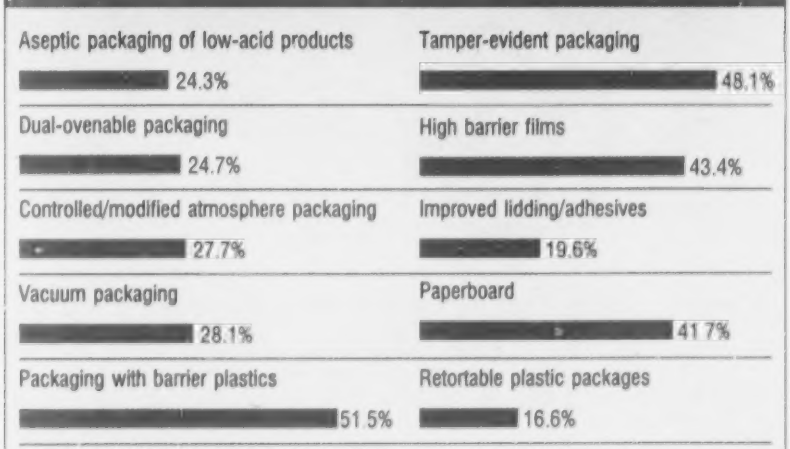
DESPITE THE DOWNTURN

Packagers continue to look for improved barrier materials in primary packaging and energy-efficient machinery to minimize costs.

MARGIE J. RUSSELL
TECHNICAL EDITOR

Important Packaging Areas

Respondents were asked to check the areas of food packaging likely to be of most importance to their companies over the next two years.



Source: Food Engineering.

Environmental issues may seem to be at the forefront of the packaging sector right now, but they are not drastically affecting the wishes and desires of *Food Engineering's* Executive Advisory Panel. Responding to the sixth Annual Packaging Buyers Survey, the more than 500 members of the Board told us that the areas of food packaging likely to be the most important for their companies over the next two years were high barrier films and packaging with barrier plastics. They also had some requests for the future developments including:

- "High barrier films for moisture retention in soft candies. Higher quality graphics for better P-O-P presentation." – product development manager for a candy company.

- "Better barriers for pure-pak and bag-in-box dairy products."—vice president and general manager for a Northeast juice company.
- "Switching non-barrier packaged products into barrier packages. Switching some packages so they become more environmentally friendly."—director of research and development for a pet-product firm.
- "Improving barrier properties. Improving shelf presentation. Adaptation to new technology."—director of engineering for a Midwest food processor.

But there may be a price to pay for these high-barrier, high-tech films: environmentally-acceptable disposal. For the past two years, the green movement has been rearing its head and showing up in the answers of our panelists as they become more concerned about the final destination of their packaging materials.

There are, however, no compromises here: Packagers still want the best materials for their products, but these materials must be disposed of easily or recycled, which, in itself, is no easy job. In responding to a question on the survey concerning changes in primary packaging materials and package designs in the next year, a number of respondents gave some thought-provoking answers on packaging and the environment. A technical director for a Midwestern food company claimed "my company will be changing plastic resin due to environmental legislation (recyclability) in some areas." A director of packaging systems for a large processor noted that "we will be upgrading quality and addressing environmental issues by going to more friendly materials and/or source reduction," and a corporate packaging manager said that packaging changes would be occurring to make materials more environmentally acceptable, emphasizing source reduction and reusability.

Emphasis on machinery

Even though one panel member exclaimed that his firm was "trying to find equipment that works!," by far the most important requirement for packaging machinery, as reported in our survey, was speed. Many panelists responded they were making machinery changes in order to acquire newer, faster models and to prepare for new product line installations. Panelists also relayed the need for their lines to become more efficient by reducing labor and increasing output.

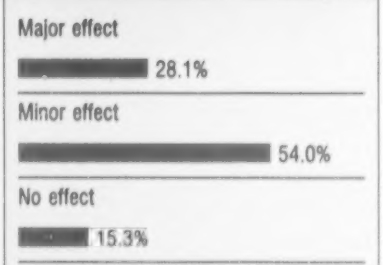
"Technology updates" and "automation" were dominant responses to the question concerning expected changes in packaging machinery for the next year. Automation is now viewed as a "critical need" in many packaging lines, but our panelists' reasons for why they needed it were varied. Accuracy, speed, and reliability were the three most common needs cited for adding automation to a line, but some panelists also mentioned they were interested in quality, yields, and the ease and cost savings of improved maintenance. Several also mentioned the need for automation in order to: more accurately inspect for defects, achieve "corporate standardization," and remain competitive and ahead of the competition.

Looking at a few of the specific, critical needs of our respondents, one panelist listed his automation requirements: "labeling, portioning of product into packaging machinery, and sanitation in the packaging area since automation means less people and less product contamination." The most critical needs for automation that a corporate industrial engineer for a Northeast food company has are: sorting out glass jar rejects and justifying palletizers on an individual packaging line with low output. And, a technical specialist with a major food processor noted that his company needs "automation with reliability and automation that can be understood and maintained by the current staff (with training). It should not be over-automated."

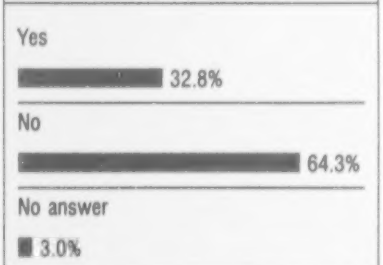
Our survey this year also asked our Advisory Panel if they were willing to pay the extra cost for automation on

Economics and Changes

Respondents were asked what effect the economy may have on their company's purchase decisions during the next year.



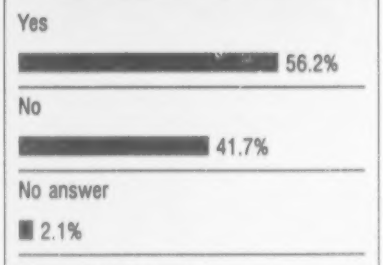
Respondents were asked if their firms are planning on changes in primary packaging materials or designs for any products during the next year.



Source: Food Engineering.

Environment and R&D

Respondents were asked if any environmental issues to date have affected R&D of new packages at their companies.

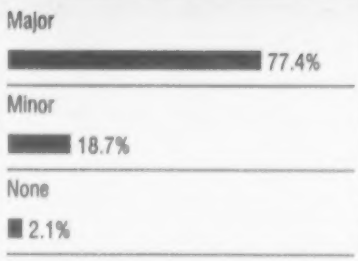


Source: Food Engineering.

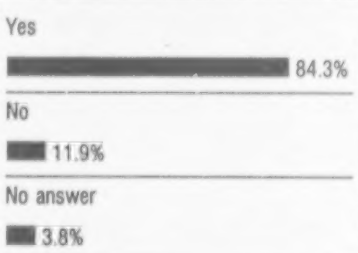
PACKAGING BUYERS SURVEY

Influence and Cost

Respondents were asked what influence automation has on the purchase decision of new equipment.



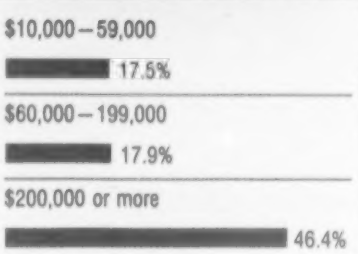
Respondents were asked if they were willing to pay the extra cost for automation on new equipment.



Source: Food Engineering.

Spending Trends

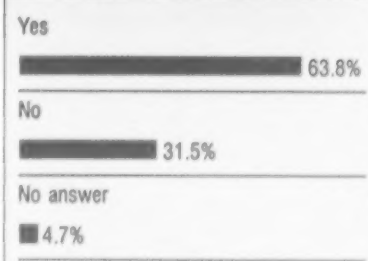
Respondents were asked to indicate expenditures on equipment in 1992.



Source: Food Engineering.

Bans and Taxes

Respondents were asked if packaging bans and/or taxes would have an effect on their company's position.



Source: Food Engineering.

new equipment and why they feel this way. A whopping 84.3 percent of the panelists responded with a resounding "Yes!" and gave various reasons why. "The payback makes up for initial investment and saves in the long term," said a Midwest product development manager. Many panelists responded that automation generally offers a more consistent end product and if the payback indicates that it is going to generate sufficient savings, then an automation purchase is definitely worth the cost. But a plant manager of a turkey processing company was cautious about jumping on the automation bandwagon and responded that "we would cost out the labor savings versus the cost of the automation and make our decision based on the numbers."

Several of our panelists were also willing to pay for automation in order to reduce operator error in set-up and changeover. Many respondents replied that their companies were looking out for employees in the long run as well: automation can mean fewer injuries to people by eliminating repetitive motion problems. And, a number of panelists justified automation in memorable quips: "Good help is hard to find" (technical director) and "machinery does not call in sick or take coffee breaks; automation runs efficiently" (plant manager for a coffee company).

Who buys?

Out of 214 respondents who answered the question "Who in your company (by title) is most responsible for packaging machinery purchases?" the 65 panelists in the engineering area represented the largest group involved in making machinery buying decisions. This group included corporate engineers, directors of engineering, engineering managers, and plant engineers. Those in the production/manufacturing section were second in the purchasing area, as 51 panelists with tiles such as operations manager, production manager, vice president operations, and vice president manufacturing reported buying machinery. Presidents and general managers are also responsible for purchasing machinery, as 37 respondents in the administrative/general management area told us that they buy machinery for their plants. The packaging department came in next (20 respondents) as the director of package engineering and packaging engineers gave the approvals to buy machinery.

Future wishes

Our panelists receive the opportunity in the survey to compile a wish list of materials or machinery that they have been unable to find. And, as expected, the respondents are looking for what most in the industry are looking for: superior materials and packaging systems with acceptable cost lines that can be environmentally positive in the long run. Some examples:

- A senior project packaging engineer asked for "a low cost rigid package that can be recycled and uses very little energy to produce or recycle. It must protect our products for a minimum of one year shelf life."
- A Midwest specialty manufacturer's wish list included a clear plastic material with high barrier properties that is environmentally sound. The material should be able to be burned like low sulfur coal to run electric plants.

FE's Packaging Buyers Survey costs $125 and is available by contacting Anne Hartnett at 215-964-4444; fax: 215-964-4273. ▲

SPECIAL EMPHASIS: **SNACK FOODS**

Life In The SNACK

Even in the midst of a recession, snack sales hum along in high gear. Favored flavors continue to be dairy-based and interest accelerates in low-fat flavor systems.

PATRICIA M. DILLON
SENIOR ASSOCIATE EDITOR

Dairy-based flavors are the most preferred for snacks. Blending a variety of cheeses and spices creates tastes such as mild cheddar, sour cream 'n chive, Jumping Jack and nacho. (Source: Kraft Food Ingredients, Inc.)

Snack sales in 1990 were bullish with sales topping $12.6 billion, an increase of 6.2 percent over 1989—incredible growth, keeping in mind that we are in a recession. One explanation attributes this shining performance to the fact that snacks offer consumers a way to trim costs by entertaining at home. Also, the movement toward snacking has been reinforced by the pre-recessionionary trend toward cocooning.

Market leader Frito-Lay, Inc. created a new snack food category with its *Sunchips* multigrain snacks, which continue to be test marketed in regular and now, bite-sized versions. Next year number two snack marketer, Borden, Inc. will challenge Frito Lay with its own wheat, corn, oat and rice-extruded snack, according to George Waydo, Borden's president, snacks and international consumer products. Waydo told *FE* that he expects multigrain snacks to become as big in the future as tortilla chips are today, adding that both were relatively unknown to the U.S. market just a short time ago. Borden also plans to intro-

LANE

O-shaped cheese snack.

In a move away from its traditional reliance on regional brands, Borden introduced *Snack Time!*, a national line of single-serve snacks.

Back to basics

Although snack sales are booming, if it doesn't taste good, it won't sell. Flavor and seasoning researchers play an essential role in snack success. And what are these specialists saying about the direction of snack foods? First, the hottest selling flavors continue to be classic dairy-based flavors, according to all of the flavorists polled by *FE*.

"Dairy-based flavors are always the most popular, no matter what type of ethnic variation," said Rich Doremus, Dell Flavors & Seasonings (a Beatreme Company), director of R&D. "Interest remains in sour cream, cheddar and spiced up versions of dairy-based flavors, such as nacho." He added that regional snack companies are more creative, with red pepper being hot in Detroit and oriental mixes with soy notes popular in the East. These flavors would never go national because regional variation is as American as apple pie.

In Southwest, Midwest and Pacific Northwest markets, Frito Lay unveiled an exotic new flavor for its restaurant style *Tostitos* chips—lime 'n chile. At first bite, the chip has the tang of lime, followed by the heat of hot chile.

Another unique taste which is gaining popularity in Northeastern markets is salt 'n vinegar. Both Borden and Eagle added salt 'n vinegar to their potato chip lines. Also, barbecue continues to be strong, according to all but one of the flavor specialists polled by *FE*. Other exotic flavors:

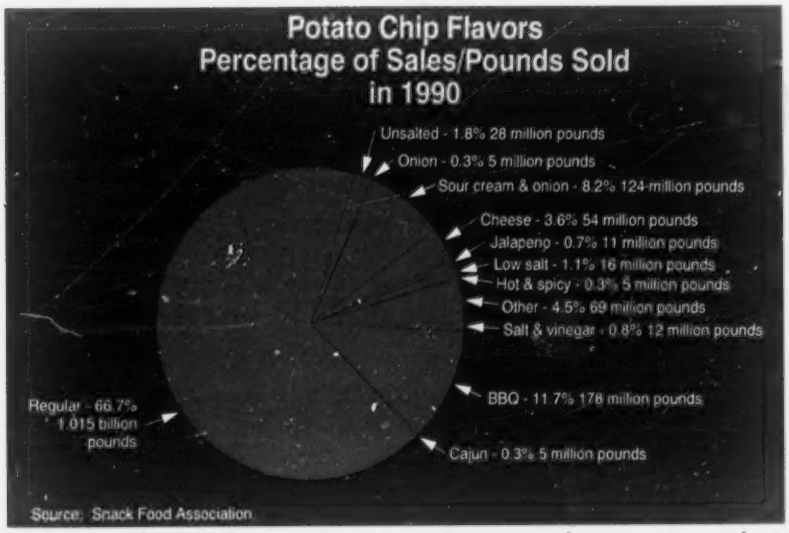
- Key Lime was exhibited at the IFT this year by Dell Flavors & Seasonings. Also, fruity character notes with white cheddar on popcorn is being tried at Dell.
- Pizza flavoring for potato chips, and lemon and salt, and honey cinnamon for tortilla chips were offered at the IFT by Georgia Spice Co., Atlanta.
- Chicken/biscuit flavor and dill pickle flavors for potato chips are being worked on at Heller Seasonings & Ingredients, Inc., Bedford Park, IL.
- *Morning Munchies* by Charles Chips, Inc., Lancaster, PA are a cinnamon- and maple-flavored extruded snack that conjures up the tastes of breakfast. It is packaged in a recyclable and dishwasher-safe plastic tub.

Lightening up

Frito-Lay reports continued success with its low-oil chips, with the exception of low-oil *Doritos*, which had to be reformulated. As a result, other snack food companies are also seeking ways to reduce the amount of saturated oil in their chips. Some are going about it by using cottonseed oil and to a lesser degree, canola oil, said Bob Haywood, sales manager at ADM Refined Oils, Decatur, IL. The most common solution is to either bake snacks, or to fry them quickly and bake them to drive off excess oil.

Frito-Lay introduced its cracker/snack chip in 1991 that was marketed in both the salty snack and cracker aisles. (Source: Frito-Lay, Inc.)

Another way to cut the fat is to use less saturated fat in the oil used as a carrier to mix with the flavor or seasoning that is sprayed onto the chip. Or, to spray less oil onto the chip before the seasoning is sprinkled onto it, said Mary Jens, senior food technologist at Kraft Food Ingredients, Memphis, TN. Another trick is to sprinkle cheese flavoring onto the product while it is still hot from the oven so


Potato Chip Flavors
Percentage of Sales/Pounds Sold
in 1990
Unsalted - 1.8% 28 million pounds
Onion - 0.3% 5 million pounds
Sour cream & onion - 8.2% 124 million pounds
Cheese - 3.6% 54 million pounds
Jalapeno - 0.7% 11 million pounds
Low salt - 1.1% 16 million pounds
Hot & spicy - 0.3% 5 million pounds
Other - 4.5% 69 million pounds
Salt & vinegar - 0.8% 12 million pounds
BBQ - 11.7% 178 million pounds
Cajun - 0.3% 5 million pounds
Regular - 66.7% 1.015 billion pounds
Source: Snack Food Association

With sales of $4.1 billion, potato chips remain king of the snacks. Flavor popularity varies with parts of the country.

more cheese flavoring will stick and less is needed, she added.

Although most of us are used to lots of solids at the bottom of a bag of chips, lighter formulations at Dell concentrate the flavor so less solid is used, according to Doremus. "Also, to cut down on oil, we're trying to get away from using oil-based slurries in seasoning," he added.

Two areas of utmost importance when formulating low fat systems are the flavor and mouthfeel from the flavor carrier (which normally contains fat), said Ted Foti, marketing director at McCormick Flavor Division, Hunt Valley, MD. The idea is to replicate the full body taste of the fat carrier within the flavor itself, he added. "It takes a lot of trial and error and there's no standard formula. A different solution is needed for each application," Foti said.

Usually when a company wants to make a low fat claim, it also wants to make a low salt claim, said Kathy Connolly, manager of product development at Heller. At the same time, suppliers have been getting requests to "increase salt perception without using salt," said Mike Hudson, supervisor of food applications at Provesta.

In the past, MSG was used to enhance flavor; however, many food processors now are deemphasizing it. Lately, MSG has gotten bad press from a *60 Minutes* program. However, many of the flavor specialists feel the negative publicity is unjustified since MSG is claimed to have ill effects only on those few people who say they are allergic to it.

"Some people are allergic to peanuts and they don't take them off the market," said Doremus, who added that products with MSG should simply be labeled so individuals who are allergic can avoid them.

Meanwhile, the flavor houses that specialize in MSG alternatives reported receiving a flurry of inquiries in response to the *60 Minutes* program. Most of the inquiries came from companies that are positioning their products as health-oriented and are concerned about public perception of MSG on the label. However, all of them have not reformulated since many are awaiting FDA's ruling on labeling to see how MSG and its various alternatives must be listed, said Percie Lamar, Flavorite's Memphis, TN market development manager.

Meanwhile a vast majority of those polled by *FE* said they noticed a slight but steady increase in the amount of requests for kosher snacks. Statistics from Lubicom, a New York-based marketing firm, show the number of kosher products made in 1987 equaled 16,000 and by 1990 that number swelled to 21,000. Sales of kosher products grew from 1987's $1.5 billion to over $1.75 billion by 1990, according to Lubicom.

Less than a third of those who buy kosher goods are Jewish. Most are simply consumers who perceive kosher products as having freshness and quality. Most of the flavor specialists contacted by *FE* reported a slight, but steady increase in the amount of kosher requests.

Kosher ingredients

However, making kosher snacks is more complex than it sounds. Before a cheese powder can be made, the cheese must have been aged from six to 12 months and processed under kosher supervision which adds both time and expense to cheese-based kosher snacks, said Jens. However, the extra effort is worthwhile to gain access to the kosher market, said Flavorite's Lamar. This long lead time emphasizes the importance of careful coordination between food manufacturers and ingredient suppliers to ensure a smooth market introduction of complex products, such as kosher foods, Lamar added.

And, in case you ever wondered what the difference was between kosher and pareve: Pete Friedman, vice president of R&D at Flavorite said a kosher product may contain dairy ingredients (which to a kosher Jew would be unacceptable to eat with meat products). A pareve product is prohibited from containing dairy ingredients (which would make it kosher to eat with a hamburger).

So, whether the focus is kosher, low-fat, or exotic new flavors, snack ingredient R&D will have to keep on its toes. And with more consumers staying home to snack, coming up with new and innovative snack products certainly seems to be a profitable and worthwhile effort. ▲